

TRAITÉ DE COOPÉRATION EN MATIÈRE DE BREVETS

PCT

RAPPORT PRÉLIMINAIRE INTERNATIONAL SUR LA BREVETABILITÉ (chapitre I du Traité de coopération en matière de brevets)

(règle 44bis du PCT)

Référence du dossier du déposant ou du mandataire S6421FSM	POUR SUITE À DONNER Voir le point 4 ci-dessous	
Demande internationale no. PCT/FR2004/050702	Date du dépôt international (<i>jour/mois/année</i>) 16 December 2004 (16.12.2004)	Date de priorité (<i>jour/mois/année</i>) 22 December 2003 (22.12.2003)
Classification internationale des brevets (8 ^e édition, sauf indication d'une édition antérieure) Voir les informations pertinentes dans le formulaire PCT/ISA/237		
Déposant L'AIR LIQUIDE, Société Anonyme à Directoire et Conseil de Surveillance pour l'Etude et l'Exploitation des Procédés Georges Claude		

1. Le présent rapport préliminaire international sur la brevetabilité (chapitre I) est établi par le Bureau international au nom de l'administration chargée de la recherche internationale selon la règle 44bis.1.a).

2. Ce RAPPORT comprend un total de 8 feuilles, y compris la présente feuille de couverture.

Dans les feuilles jointes, toute référence à l'opinion écrite de l'administration chargée de la recherche internationale doit être entendue, à la place, comme une référence au rapport préliminaire international sur la brevetabilité (chapitre I).

3. Le présent rapport contient des indications relatives aux points suivants :

- ☒ Cadre n° I Base de l'opinion
- ☐ Cadre n° II Priorité
- ☐ Cadre n° III Absence de formulation d'opinion quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle
- ☐ Cadre n° IV Absence d'unité de l'invention
- ☒ Cadre n° V Déclaration motivée selon l'article 35.2) quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle; citations et explications à l'appui de cette déclaration
- ☐ Cadre n° VI Certains documents cités
- ☐ Cadre n° VII Certaines irrégularités relevées dans la demande internationale
- ☒ Cadre n° VIII Certaines observations relatives à la demande internationale

4. Le Bureau international communiquera le présent rapport aux offices désignés conformément aux règles 44bis.3.c) et 93bis.1 mais pas avant l'expiration du délai de 30 mois à compter de la date de priorité (règle 44bis.2), sauf si le déposant a présenté une requête expresse à cet égard en vertu de l'article 23.2).

Date d'établissement du présent rapport
29 August 2006 (29.08.2006)

Fonctionnaire autorisé

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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

TRANSLATION

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference S6421FSM		Date of mailing (day/month/year) See Form PCT/ISA/210 (sheet 2)
FOR FURTHER ACTION See paragraph 2 below		
International application No. PCT/FR2004/050702	International filing date (day/month/year) 16.12.2004	Priority date (day/month/year) 22.12.2003
International Patent Classification (IPC) or both national classification and IPC F25J3/04, H02P5/00		
Applicant L'AIR LIQUIDE, Société Anonyme à Directoire et Conseil de Surveillance pour l'Etude et l'Exploitation des Procédés Georges		

<p>1 This opinion contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability: citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>	
<p>2 FURTHER ACTION</p> <p>If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.</p> <p>If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.</p> <p>For further options, see Form PCT/ISA/220</p>	
<p>3 For further details, see notes to Form PCT/ISA/220</p>	
Name and mailing address of the ISA/O:IP	Authorized officer
Facsimile No.	Telephone No.

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Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐

This opinion has been established on the basis of a translation from the original language into the following language:

_____, which is the language of a translation, furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

- a. type of material

☐

a sequence listing

☐

table(s) related to the sequence listing

- b. format of material

☐

in written format

☐

in computer readable form

- c. time of filing/furnishing

☐

contained in the international application as filed.

☐

filed together with the international application in computer readable form.

☐

furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-10	YES
	Claims	--	NO
Inventive step (IS)	Claims	--	YES
	Claims	1-10	NO
Industrial applicability (IA)	Claims	1-10	YES
	Claims	--	NO

2. Citations and explanations:

1. Reference is made to the following documents:

- D1: US-A-6 119 482 (BIANCHI OSWALDO ET AL.)
19 September 2000
- D2: US-A-5 730 778 (HILL CHARLES C ET AL.)
24 March 1998
- D3: US-B1-6 273 936 (BARRY LIONEL ET AL.)
14 August 2001
- D4: KLEINER F ET AL.: "INCREASE POWER AND
EFFICIENCY OF LNG REGRIGERATION COMPRESSOR
DRIVERS ALL-ELECTRIC-DRIVEN PLANTS CAN OFFER
MANY BENEFITS" January 2003
- D5: EP-A-0 087 197 (BBC BROWN BOVERI & CIE)
31 August 1983

2. The subject matter of **claim 1** is novel, but it does
not involve an inventive step (PCT Article 33(3))
for the following reasons:

- 2.1 Document D1 describes (the references between
parentheses apply to this document):
an air separation unit (ASU) comprising a system of
columns (MP, BP, CM), means (J, I) for feeding the
unit at least partially with compressed air coming
from at least one booster compressor (C1), means for

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Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

purifying and cooling the air (E, LE), means for sending it to a column (CM, MP) of the column system and means for withdrawing a gaseous product (O) from one column of the column system.

The subject matter of claim 1 therefore differs from this known unit in that the booster compressor is not driven by a turbine but by a motor with a variable rotation speed, having at least two nominal rotation speeds, and in that it includes means for supplying the motor with a variable-frequency AC current.

The subject matter of claim 1 is therefore novel (PCT Article 33(2)).

2.2 The problem that the present invention is intended to solve can thus be considered to be how to allow the operation of the air booster compressor to be easily adjusted according to the production running conditions of the separation unit.

2.3 The solution, as proposed in claim 1 of the present application, is not considered to be inventive (PCT Article 33(3)) for the following reasons:

It is well known to those skilled in the art that a compressor may be driven by a variable-speed motor in place of a turbine in order to solve this stated problem, see documents D2 to D5 and the references cited in the International Search Report.

Consequently, it is not apparent that the specific limitation to such a motor in the unit of D1 results in a particular and unexpected technical effect. To

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

a person skilled in the art, it would be obvious to consider the inclusion of this feature with corresponding effect in the method of document D1, thereby arriving at the claimed subject matter.

3. Despite the lack of clarity mentioned below (box VIII), the subject matter of **method claim 5** is novel, but again it does not involve an inventive step (PCT Article 33(3)) for the following reasons:

- 3.1 In this case, the subject matter of claim 5 differs from the method known from D1 in that:

(i) the booster compressor is driven by a variable-speed motor; and
(ii) during a start-up period of a compressor for supplying air to the ASU and to the metal production unit, the speed of the motor of the booster compressor is higher than the speed of the motor during the steady-state operation of the unit.

- 3.2 The problem that the present invention is intended to solve can thus be considered to be how:

(i) to easily adjust the operation of the air booster compressor according to the production operation of the ASU; and
(ii) at the booster compressor, to intake at a lower pressure during start-up of the blower, while still compressing the air to the pressure intended for the ASU.

- 3.3i With regard to D2-D5, and for the same reasons developed above, it would be obvious to a person

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Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

skilled in the art to consider the inclusion of a variable-speed motor in the method of document D1, thereby arriving at the claimed subject matter.

3.3ii An increase in the rotation speed of a motor relates to simple measures taken so as to operate a compressor in order to extend its operating range, which measures come within the scope of the customary practice followed by persons skilled in the art. The advantages thus achieved can readily be foreseen. The subject matter of claim 5 therefore contains no features which would involve an inventive step.

4. **Claims 2 to 4 and 6 to 10** contain features which are known from documents D1 to D5 cited above. Consequently, the subject matter of these claims does not contain any additional features which, in combination with the subject matter of any one of the claims on which they depend, would involve an inventive step (PCT Article 33(3)).

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

5. The application fails to comply with the requirements of PCT Article 6 since claims 5, 6 and 8 are unclear.
- 5.1 The features presented in the preamble of **method claim 5** relate to a way of describing the device in terms of its technical features rather than clearly defining the operating mode of the method. The intended limitations are therefore not clear from this claim, contrary to the requirements of PCT Article 6.
- In addition, it is clearly apparent from the first page of the description that the following feature is essential for the definition of the invention: To start up the metal production unit, *it is firstly necessary to turn on the air blower* so as to deliver an air pressure for starting up the air booster. Since independent claim 5 does not contain this feature, it does not meet the requirement following from PCT Article 6 taken in combination with PCT Rule 6.3(b) that any independent claim must contain all the technical features essential for the definition of the invention.
- 5.2 The features of **claims 6 and 8** have already been used in preceding claims 5 and 7, to which said claims refer, and cast doubt as to the meaning of the additional features for which protection is sought. The subject matter of said claims is therefore not clearly defined (PCT Article 6).